OPERATING INSTRUCTIONS for the

ALLEN

MODEL E-305 VACUUM AND FUEL PUMP TESTER

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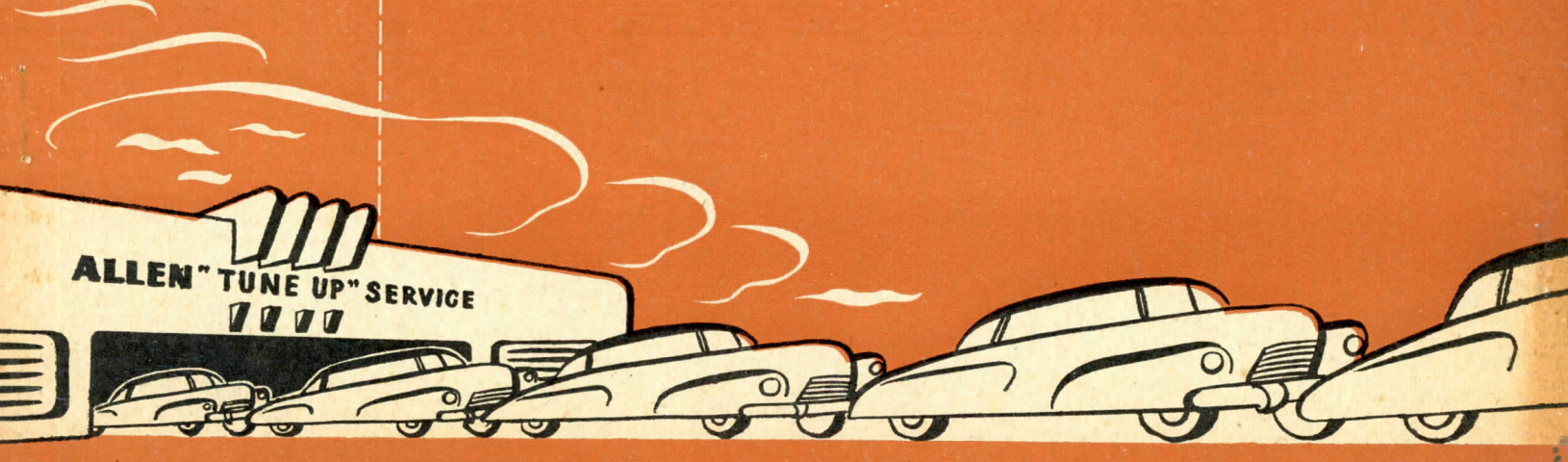

ALLEN ELECTRIC and EQUIPMENT COMPANY • KALAMAZOO, MICHIGAN

PRICE
25 CENTS

OPERATING INSTRUCTIONS
FOR THE
ALLEN E-305
VACUUM AND FUEL PUMP TESTER

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PRICE 25¢

ALLEN ELECTRIC AND EQUIPMENT COMPANY

MANUFACTURERS OF TUNE-UP,
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VACUUM AND FUEL PUMP TESTER

ALLEN E-302

FOR THE

OPERATING INSTRUCTIONS

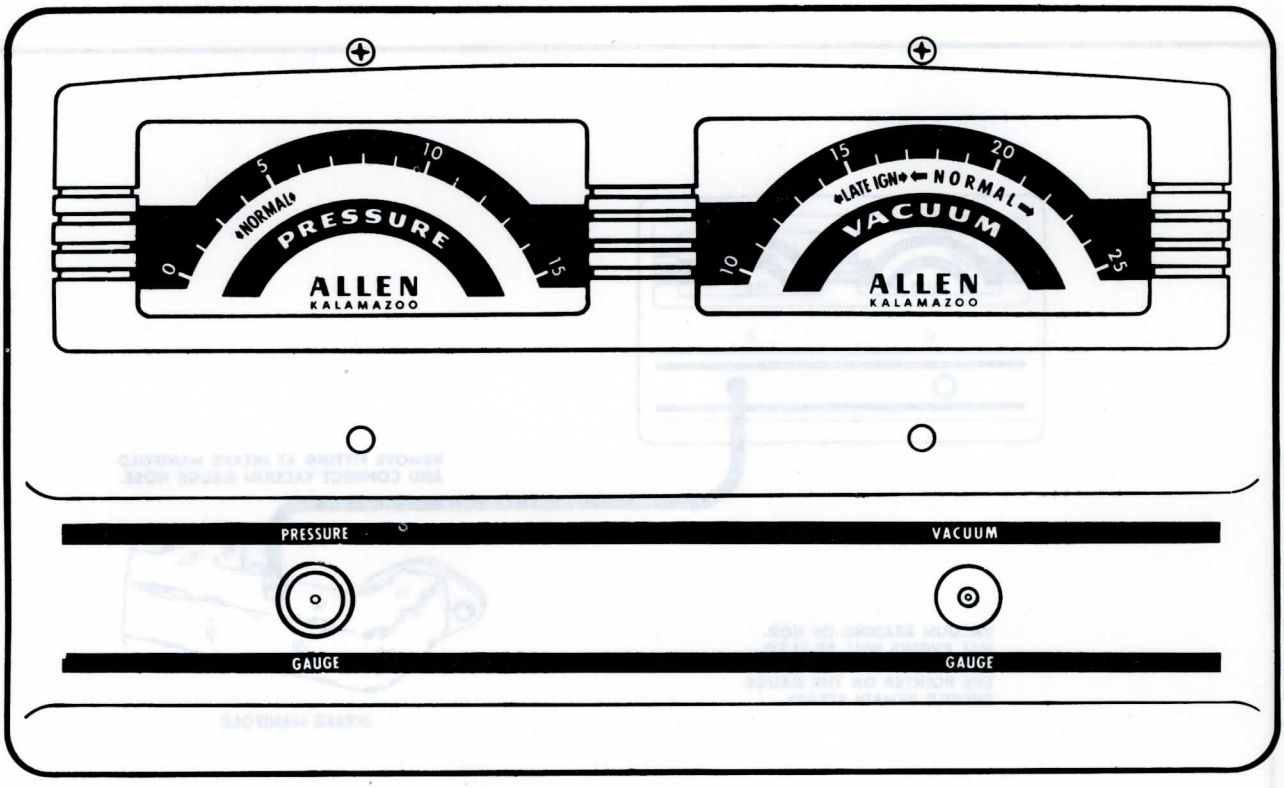
THE MODEL E-305 VACUUM-FUEL PUMP TESTER

PURPOSE OF THE TESTER

The Allen E-305 Vacuum-Fuel Pump Tester contains a Vacuum gauge calibrated from 10 to 25 inches of vacuum for diagnosing engine performance and a Pressure gauge calibrated from 0 to 15 pounds pressure for testing fuel pump pressure.

Engine performance depends on Compression, Carburetion and Ignition all of which must be in perfect working condition to obtain a normal vacuum reading.

The vacuum gauge is an indispensable and valuable instrument for use before and after an engine tune-up to show whether trouble exists in Compression, Carburetion or Ignition.



VACUUM-FUEL PUMP TESTER
FIG. 1

VACUUM GAUGE

The vacuum gauge is connected to the intake manifold and if the gauge does not have a steady reading between 17 and 21 inches, it indicates that the carburetor idle adjustment is not correct, valves are sticking, valve seats are burned, valves not properly adjusted, valve guides are loose, exhaust system choked, leaking head or intake manifold gaskets, spark plugs not firing, faulty ignition, incorrect valve or ignition timing, piston rings worn or cylinder walls scored.

FUEL PUMP GAUGE

The fuel pump gauge is connected by means of a special adapter to the carburetor to show fuel pump pressure. Pressure at the carburetor is important as too little pressure will starve the carburetor and too much pressure may flood the carburetor or cause rich fuel mixtures resulting in low mileage and poor performance. Fuel pumps are tested for both pressure and capacity.

METER ILLUMINATION

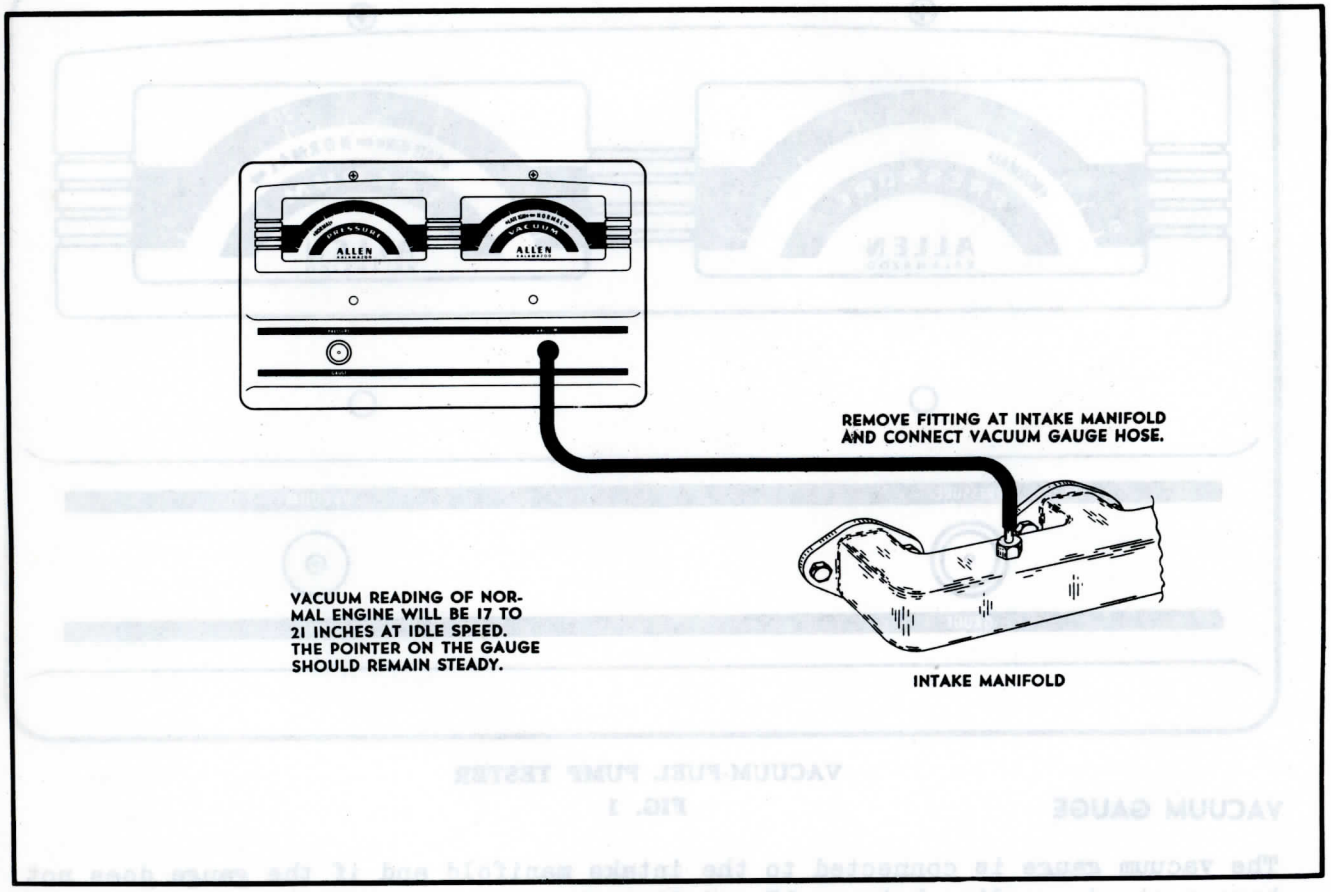
A double lead with a molded socket is furnished for connection to the plug in back of the Tester for 6 volt battery connection for meter illumination.

TESTING ENGINE CONDITION

CONNECTING VACUUM GAUGE TO INTAKE MANIFOLD

1. Attach vacuum gauge hose to the intake manifold fitting, Fig. 2. If this fitting is not conveniently located, the hose may be attached to the windshield wiper connection. However, care should be taken to determine that there are no leaks between the manifold and the point of connection.

2. Operate engine until normal temperature is reached (oil and coolant should be between 150 degrees and 170 degrees Fahrenheit.)



VACUUM GAUGE CONNECTION TO MANIFOLD

FIG. 2

3. Run engine at manufacturer's recommended idle speed (approximately 500 R.P.M.) If the vacuum gauge pointer springs back and forth without apparently indicating any one condition, it indicates there is more than one trouble to be corrected and the gauge is attempting to show all the troubles at one time. A normal engine will have 17 to 21 inches of vacuum and the pointer will remain stationary.

VACUUM GAUGE READINGS

The following pages illustrate and explain the various vacuum gauge readings corresponding to various engine conditions. It is recommended that experience be gained in the use of the vacuum gauge by creating known faults, such as retarding ignition timing, installing a known faulty spark plug, adjusting valve tappet clearance so that they are too close or not uniform, and noting the affect on the vacuum gauge readings.

TESTING ENGINE CONDITION - (CONTINUED)

VACUUM GAUGE READINGS - (CONTINUED)

The knowledge gained by duplicating the various troubles that affect manifold vacuum and seeing the effect they have on the vacuum gauge will prove invaluable in becoming familiar with the tester and in pointing the trouble out to the car owner.

ALTITUDE CORRECTION TABLE

The vacuum gauge reads the difference between the pressure inside the intake manifold and the atmospheric pressure outside of the manifold. Consequently, normal vacuum readings will decrease above sea level due to the fact that atmospheric pressure decreases above sea level. Generally speaking, the vacuum will read one inch lower for each 1,000 feet above sea level. The following tabulation shows the approximate readings in inches of vacuum for various altitudes which will be obtained on a normal engine.

ALTITUDE	INCHES OF VACUUM
Sea Level to 1,000 Ft. - - - - - - - -	18 to 22
1,000 Ft. to 2,000 Ft. - - - - - - - -	17 to 21
2,000 Ft. to 3,000 Ft. - - - - - - - -	16 to 20
3,000 Ft. to 4,000 Ft. - - - - - - - -	15 to 19
4,000 Ft. to 5,000 Ft. - - - - - - - -	14 to 18
5,000 Ft. to 6,000 Ft. - - - - - - - -	13 to 17

Eight cylinder engine vacuum will be toward the highest vacuum readings, whereas 6 and 4 cylinder engines will be correspondingly closer to the lower vacuum readings.

Any variation in atmospheric conditions will cause a change in vacuum, just as they cause a barometer to rise and fall in line with weather conditions. WHEN USING A VACUUM GAUGE, THE MOST IMPORTANT THING TO WATCH IS THE ACTION OF THE GAUGE RATHER THAN OBTAINING AN ACTUAL OR THEORETICAL READING.

NORMAL ENGINE -- 17 TO 21 INCHES VACUUM (FIG. 3)

At idling speed the gauge should read approximately 17 to 21 inches of vacuum. The reading obtained on a normal engine should be with the pointer steady. When the throttle is opened and quickly closed, the pointer will drop to zero, (open throttle vacuum), and rise without pulsation to the normal reading.

INCORRECT IDLING MIXTURE (FIG. 4)

An incorrect carburetor idling mixture is generally indicated when the needle moves slowly backward and forward. A mixture that is too rich or too lean will burn slower, and combustion will consequently continue until the intake valve opens, and when this occurs, the vacuum is interrupted. Also, too lean a mixture can cause an irregular drop of the needle.

INTAKE SYSTEM AIR LEAKS (FIG. 5)

If there are any leaks in the intake system such as leaky intake manifold gaskets, windshield wiper or tubing, manifold to carburetor gasket, vacuum starting switch, vacuum brakes, vacuum transmission control or vacuum clutch, they will be indicated immediately on the gauge. The pointer will drop from 3 to 9 inches below normal and will remain quite steady, but will have a tendency to drop lower depending on the speed of the engine and the increase in leakage due to heat expansion.

TESTING ENGINE CONDITION - (CONTINUED)

RESTRICTED EXHAUST SYSTEM (FIG. 6)

The purpose of this test is to determine whether or not there is any restriction or clogged condition in the exhaust system which would cause a back pressure in the manifold. The test is made by slowly opening the throttle until approximately 2,000 R.P.M. is reached. Close the throttle quickly. If there is no excessive back pressure, the pointer will return to the normal reading quickly. If the gauge registers 5 inches or more above the normal reading and seems to stop momentarily in its return to a normal reading, the exhaust system is partially restricted. When such a condition is found, it is necessary to check all of those units which might cause the trouble. These are: Damaged exhaust pipe, heat control valve partially or wholly closed, heat control valve shaft frozen, exhaust system clogged due to incorrect installation of exhaust type heater or clogged muffler.

CYLINDER HEAD LEAKAGE (FIG. 7)

If the cylinder head gasket is leaking, the pointer will drop sharply from the normal or maximum reading to a reading of approximately 10 inches or less.

LEAKING VALVES (FIG. 8)

If the valves are leaking the pointer will drop one or more inches from the normal maximum reading. If only one valve is leaking the drop will occur at regular intervals whenever the one particular valve is attempting to close. If more than one valve is leaking, the action will be more frequent depending upon the number of valves which are not seating properly.

VALVE TAPPETS TOO CLOSE (FIG. 9)

If all of the valve tappets are evenly adjusted, but are set too close, the reading will be below normal but will remain steady. If valve tappet clearances are not uniform, a reading similar to one for a leaking valve will be obtained.

STICKING VALVES (FIG. 10)

Carburetor should be adjusted so that the engine is running at the manufacturer's recommended idle speed. A sticking valve will be indicated by a rapid intermittent dropping from the maximum normal reading. Such a condition is readily distinguished from a leaking valve inasmuch as the drop of the pointer will not occur with even regularity but only when the faulty valve or valves stick. Such a condition can be definitely proven if the application of a small quantity of penetrating oil temporarily remedies the condition.

WEAK OR BROKEN VALVE SPRINGS (FIG. 11)

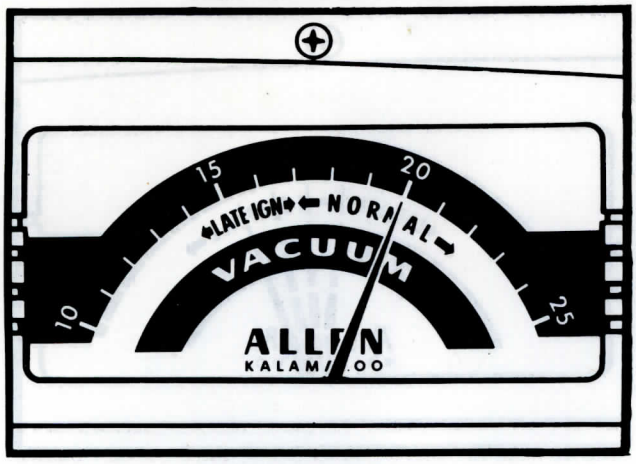
The gauge gives a positive indication of weak valve springs. This can be determined by running the engine at steadily increasing speeds up to approximately 2,000 engine R.P.M. If the pointer fluctuates rapidly between 12 and 24 inches and the fluctuations increase in speed as the engine R.P.M. is increased, weak valve springs are indicated. If a valve spring is broken, the pointer will fluctuate rapidly every time the valve attempts to close.

PISTON RING LEAKAGE (FIG. 12)

Before making this particular test, it is essential that the engine shall have given normal readings on all previous tests. Also, it is imperative that the oil in the crankcase be in good condition, as poor or diluted oil will be indicated as a loss of compression when such is not actually the case.

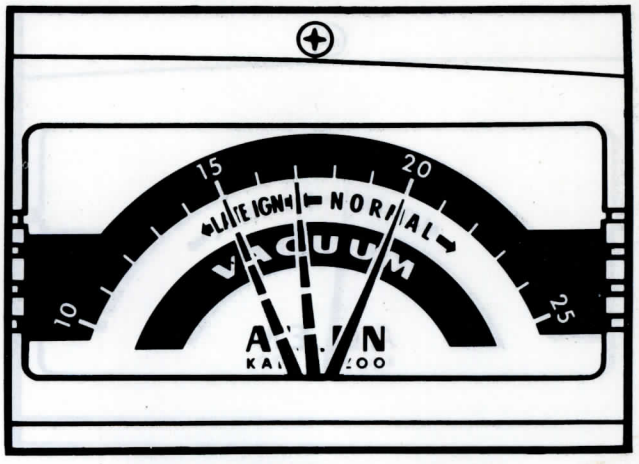
CHART SHOWING VARIOUS DIAL READINGS

TEST AT 500 R.P.M.



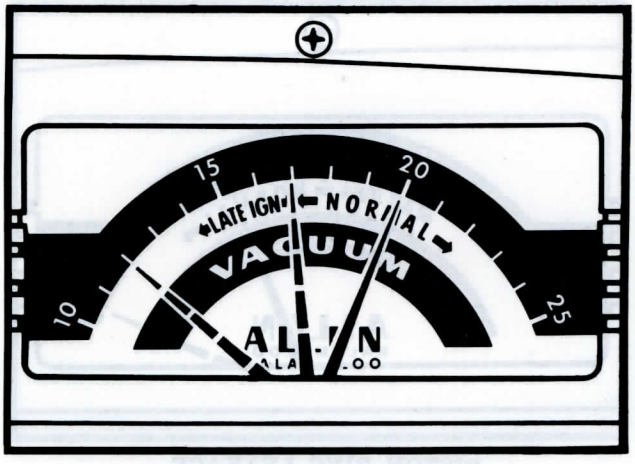
NORMAL ENGINE
STEADY POINTER
FIG. 3

TEST AT 500 R.P.M.



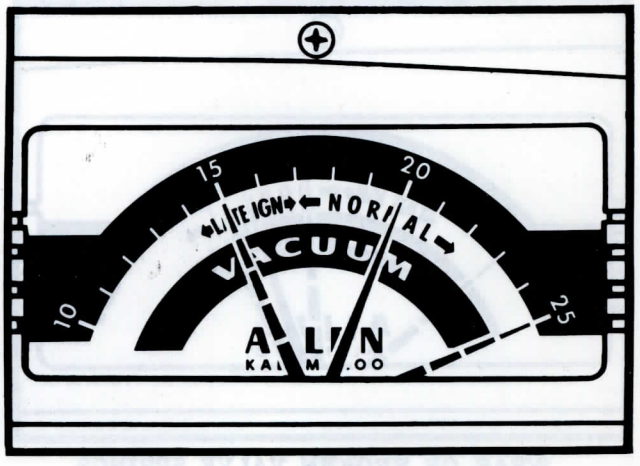
INCORRECT IDLING MIXTURE
SLOW OSCILLATION OF POINTER
FIG. 4

TEST AT 500 R.P.M.



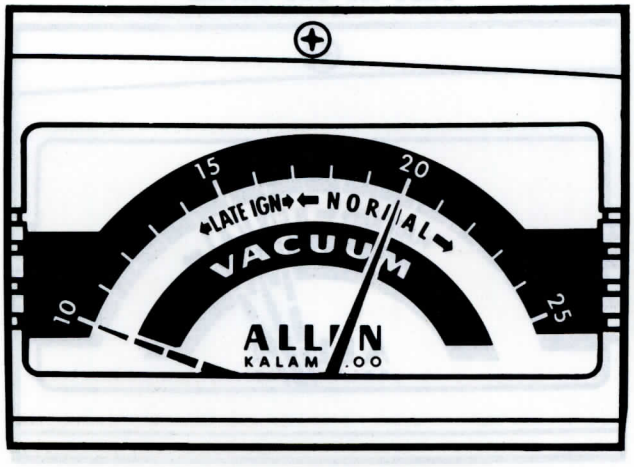
INTAKE SYSTEM AIR LEAK
LOW VACUUM READING
FIG. 5

READ AT 2000 R.P.M.



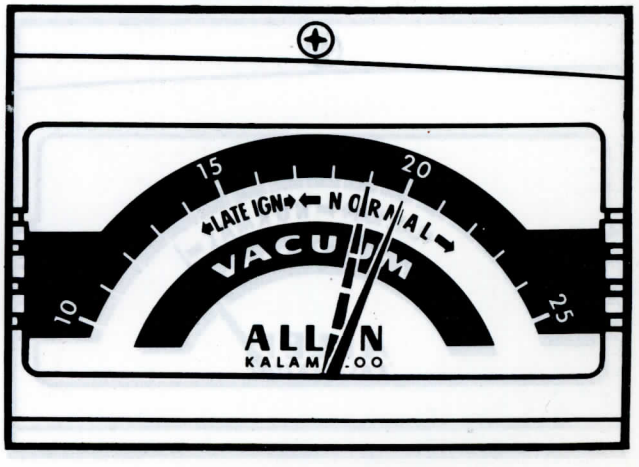
RESTRICTED EXHAUST SYSTEM
POINTER HESITATES ABOVE NORMAL
FIG. 6

TEST AT 500 R.P.M.



CYLINDER HEAD LEAKAGE
SHARP DROP FROM NORMAL
FIG. 7

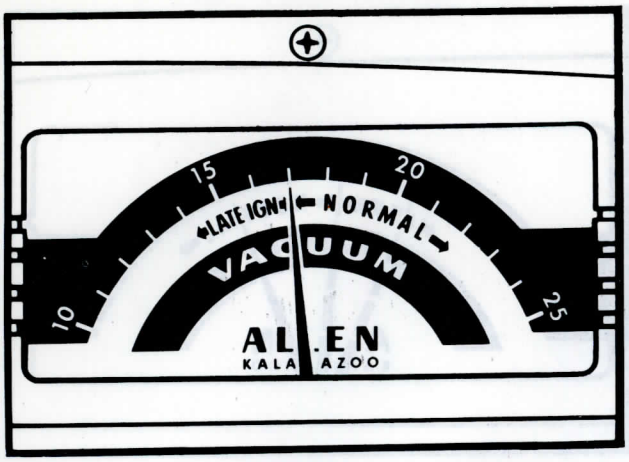
TEST AT 500 R.P.M.



LEAKING VALVES
INTERMITTENT DROP IN VACUUM
FIG. 8

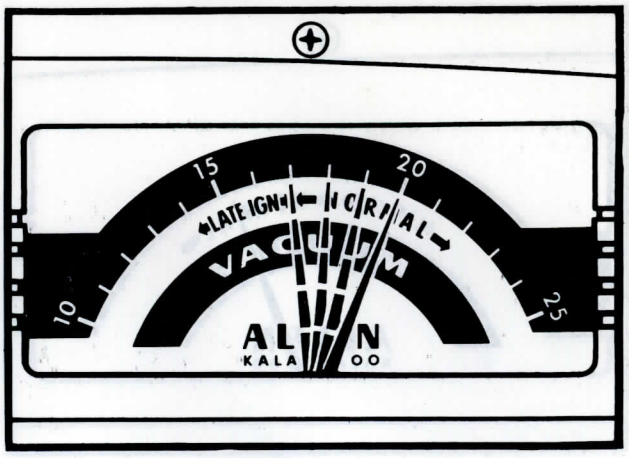
CHART SHOWING VARIOUS DIAL READINGS

TEST AT 500 R.P.M.



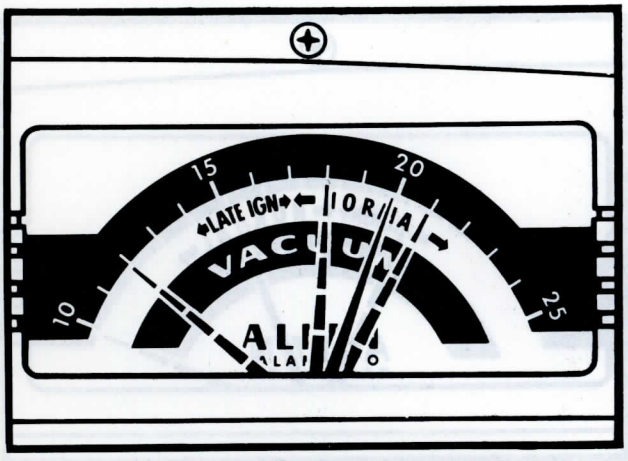
VALVE TAPPETS TOO CLOSE
READING BELOW NORMAL
FIG. 9

TEST AT 500 R.P.M.



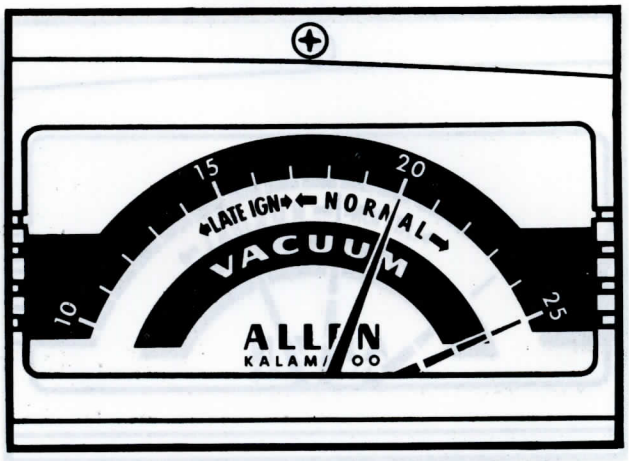
STICKING VALVES
RAPID INTERMITTENT FLUCTUATION
FIG. 10

READ AT 2000 R.P.M.



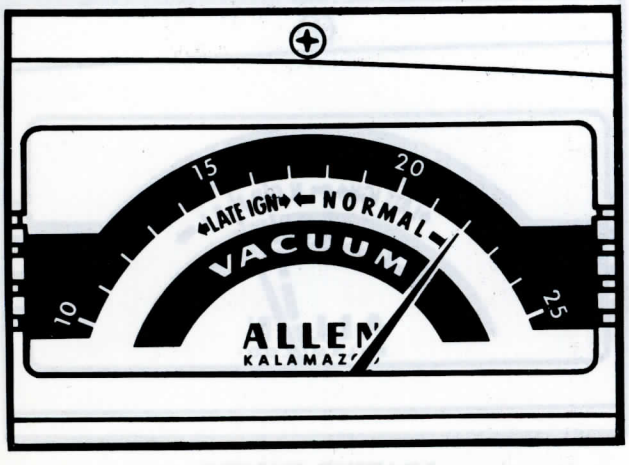
WEAK OR BROKEN VALVE SPRINGS
RAPID INTERMITTENT FLUCTUATIONS
INCREASING WITH ENGINE SPEED
FIG. 11

READ AT 2000 R.P.M.



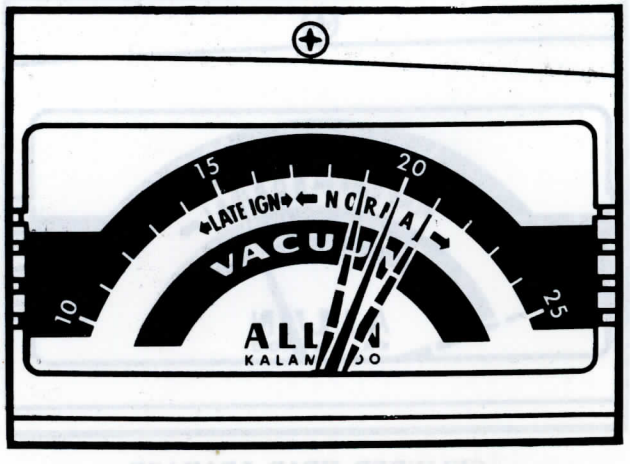
PISTON RING LEAKAGE
VACUUM CHANGES WITH CHANGE
IN ENGINE SPEED
FIG. 12

TEST AT 500 R.P.M.



EARLY IGNITION TIMING
READING ABOVE NORMAL
FIG. 13

TEST AT 500 R.P.M.



GENERAL IGNITION CONDITION
RAPID VIBRATION OF POINTER
FIG. 14

TESTING ENGINE CONDITION - (CONTINUED)

PISTON RING LEAKAGE (FIG. 12)- CONTINUED

To test for improperly fitted, defective or leaking piston rings, the engine should be run at idling speed, then open the throttle quickly to the full open position, allowing the engine to pick up speed to approximately 2,000 R.P.M. Close the throttle quickly. If the pointer jumps immediately to 5 or more inches above the normal vacuum at idle, the piston rings are in good condition. A reading of less than 5 inches above the normal reading, indicates a loss in compression and the engine should be given a compression test with the compression gauge before condemning the rings.

EARLY IGNITION TIMING (FIG. 13)

If the pointer remains at 2 or 3 inches below normal and is practically stationary, it indicates that the ignition timing is late. If the gauge reads above the normal reading, it is an indication that the ignition timing is too early. The operator, however, should not attempt to time the ignition distributor to the engine with the vacuum gauge. A timing light should be used for this purpose.

GENERAL IGNITION CONDITION (FIG. 14)

Defective spark plugs or improperly spaced plug gaps, burned or improperly spaced or synchronized distributor contact points or any leak in the ignition system caused by high tension cables, distributor cap or weak ignition coil will be indicated by excessive vibration of the pointer at approximately 1 inch above or below the normal reading.

TESTING THE FUEL PUMP

PRESSURE TEST

The pressure test is made to check for excessively high pressures developed by the pump, which may cause rich fuel mixtures, and in a few cases, flooding of the carburetor. A rich mixture is one of the causes of low mileage and poor performance.

1. Disconnect the gasoline line at the carburetor, and using the fittings supplied, insert the special adapter between the carburetor and the fuel line, Figure 15.

2. Start the engine and run it at low idle speed.

3. Read on the pressure scale the pounds pressure developed by the fuel pump and compare with the manufacturer's specifications. Where the exact operating pressure is not known, a good average pressure is from 3 to 4-3/4 pounds maximum.

CAPACITY TEST

The capacity test determines the ability of the pump to produce a sufficient amount of fuel within a specified time. It is important that both a pressure and a capacity test be made to determine the condition of the fuel pump.

1. Slide a suitable container beneath the valve cap at bottom of the special adapter. The container must be marked to show a one pint level.

TESTING THE FUEL PUMP - (CONTINUED)

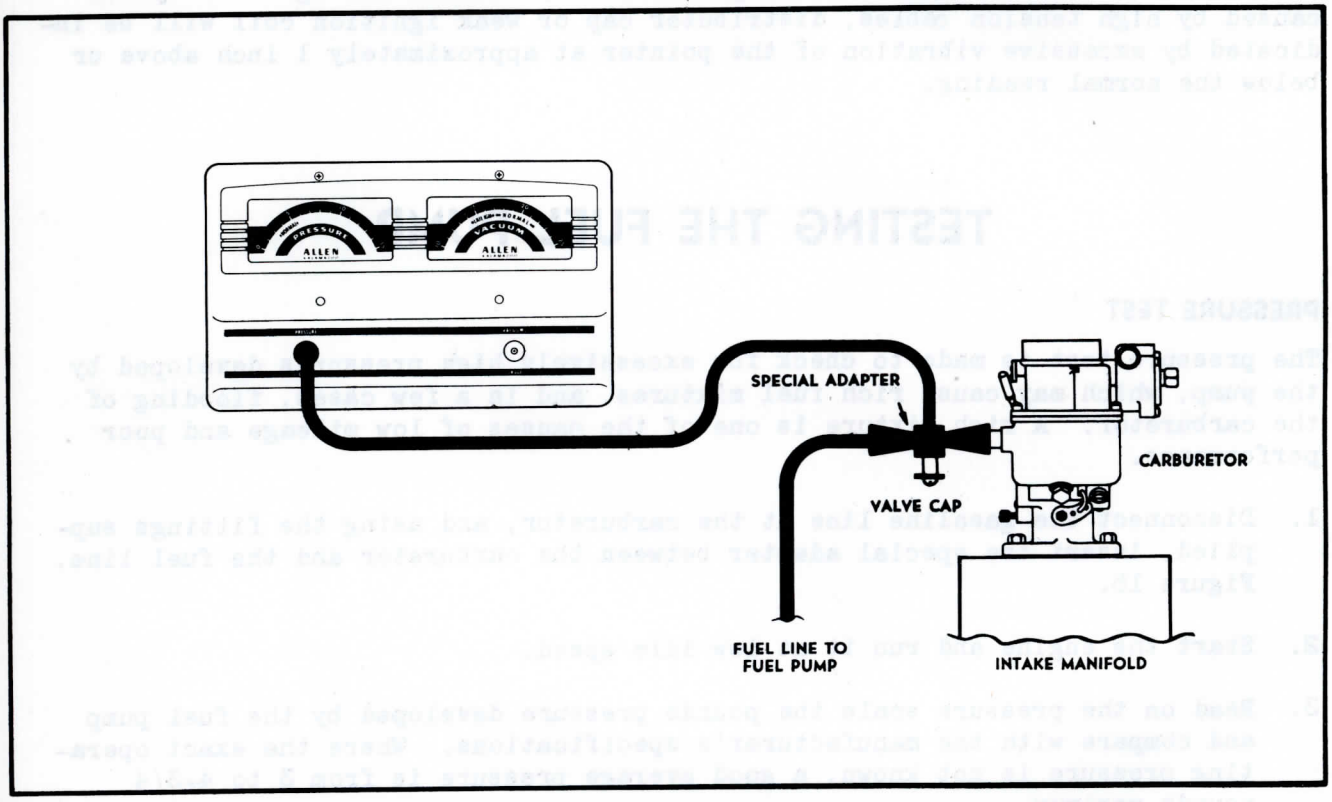
CAPACITY TEST - (CONTINUED)

CAUTION: Disconnecting the line between the carburetor and the pump removes the normal pressure on the fuel pump diaphragm causing it to flex abruptly. This may cause loose particles of dirt to enter the carburetor fuel line. Therefore, it is recommended that the fuel line and pump be flushed by operating the pump with the starter until 1/4 to 1/2 pint of gasoline has been flushed out into a suitable container before connecting the line to the carburetor.

2. Holding the container under the valve with the engine operating, remove the valve cap so that gasoline flows into the container.

3. Measure the time required to pump one pint and compare with the manufacturer's specifications. Most of the standard size pumps will deliver one pint or over, in one minute. The larger pumps will deliver one pint or over in 45 seconds.

4. If the capacity of the fuel pump is low, it may be due to air leaking into the system. Check the sediment bowl for looseness and also the gasoline line to the fuel tank and the inlet fitting on the pump, for air leaks.



CONNECTION FOR FUEL PUMP PRESSURE AND CAPACITY
FIG. 15

BOOSTER PUMP TEST

On combination pumps, having the vacuum section mounted below the fuel pump section, a punctured booster pump diaphragm often results in excessive oil consumption, rough idling or misfiring.

1. Disconnect the vacuum line from the manifold and hold a paper in front of the line while the engine is operating. If an indication of oil pumping is present, the booster pump diaphragm is punctured.

ENGINE TUNE-UP PROCEDURE

Following is a recommended procedure for use of automotive testing instruments from which a rapid estimate can be made of the repairs or replacements necessary to obtain normal vacuum for balanced engine performance of Ignition, Compression and Carburetion.

BATTERY

With the Allen E-302 VOLT-AMP TESTER, test the storage battery under starting motor load. Total battery voltages under starting motor load should be 5.1 volts or over. Individual cell voltages should be 1.7 volts or over. If the voltmeter shows a difference of over .2 of a volt between the readings of any two cells, the battery should be replaced with one fully charged. Inspect for level of electrolyte and test with a hydrometer to determine the condition of charge of the battery. The specific gravity of a fully charged battery should be between 1.265 and 1.290.

BATTERY CABLES

With the Allen Model E-302 VOLT-AMP TESTER, test the battery ground strap and starting motor cables for excessive voltage drop. Voltage drop across the ground strap or starting motor cable should not exceed .1 of a volt with starting motor in operation. Corroded or loose connections or too small a cable are sources of excessive voltage drop.

STARTING MOTOR

With the Allen Model E-302 VOLT-AMP TESTER, check voltage at the starting motor in operation, the voltage should not be less than 4.9 volts. Dry or worn bearings, burned or dirty commutator, weak brush springs or worn brushes are frequent causes of starting motor troubles and cause the starting motor to draw excessive current, resulting in low voltage at the starting motor.

GENERATOR AND REGULATOR

With the Allen Model E-302 VOLT-AMP TESTER, check generator output and voltage and current to which the regulator is adjusted. Worn brushes, dirty or burned commutator, worn bearings or weak brush springs cause generator trouble. Faulty generators or regulators should be removed for repair and be given a complete performance test on the Allen Test Bench.

SPARK PLUGS

Remove all the spark plugs and check to see if they are of the correct type and heat range. The selection of the proper type of spark plug for the driving conditions is important to both the life of the plugs and in the performance of the engine. It is generally conceded that plugs be sold in complete sets and replacements made every 10,000 miles for best performance. Clean and re-gap plugs if they are serviceable.

COMPRESSION

With the Allen Model E-340 COMPRESSION GAUGE, test each cylinder. This test will show up conditions of sticking valves and poor piston rings. If all cylinders are not approximately the same within 10% plus or minus -- it indicates leaky head gasket, valves or rings.

ENGINE TUNE-UP PROCEDURE - (CONTINUED)

IGNITION DISTRIBUTOR

With the Allen Model E-304 DWELL-TACH Tester, test the distributor cam angle through which the distributor contact points remain closed.

Examine distributor breaker contacs for pitting or burning and inspect points for alignment.

Check distributor cap and rotor for cracks or burning and high tension towers for corrosion. If edge of rotor shows unevenness or excessive burning, it should be replaced with a new one.

Check distributor for wear in bearing, cam and shaft or sticking advance mechanism on the Allen Model E-316 Syncrograph. If either of these parts are faulty, recommend an exchange distributor or complete reconditioning of the old one.

IGNITION CONDENSER

With the Allen Model E-301 Condenser Tester make a complete test of the ignition condenser for capacity, breakdown, leakage and damping. Defective condensers are those not having the proper capacity cause excessive arcing at the distributor breaker contacts, resulting in pitting and burning of the contact points.

HIGH TENSION CABLES

Inspect high tension cables. If they are cracked or oil soaked, they should be replaced with a new set. Under average driving conditions, the high tension cables should be replaced at least once a year.

IGNITION COIL

With the Allen Model E-303 Coil Tester, check the condition of the ignition coil. A weak ignition coil will cause hard starting and will miss at high speed or under quick acceleration.

IGNITION TIMING

With the Allen Timing Light, check the ignition timing. Retarded timing causes loss of power and reduces gasoline mileage. Advanced timing also causes loss of power and excessive engine ping or knock.

FUEL PUMP

With the Allen Model E-305 Vacuum-Fuel Pump Tester test the fuel pump for proper pressure, and capacity. The capacity test determines the ability of the pump to produce a sufficient amount of fuel and the pressure test determines that the pump will not flood the carburetor.

CARBURETION

With the Allen Model E-306 Combustion Tester, check carburetor for proper operation. Carburetor parts are subject to wear and should be replaced whenever necessary.

ROUTINE INSPECTION

A routine inspection should be made of the cooling system, air cleaner and oil filter, and if dirty, cleaning should be recommended. Also make an inspection of all lights, horn, brakes and clutch pedal clearance, calling the owners attention to any discrepancies. In this way you will be building up service sales and increasing the service to the customer.

CARE AND MAINTENANCE OF ELECTRICAL EQUIPMENT

1. DO NOT allow petroleum products, acids or alkalies, to come in contact with painted surfaces or plastic components.

2. Use a clean soft cloth for a DAILY dust cloth.

3. PLASTIC PANELS, LEADS AND SOCKS should be cleaned with MILD SOAP AND WATER.

4. SMALL SCRATCHES can sometimes be removed from plastic with rouge.

5. CORRODED TERMINALS can be cleaned with a solution of baking soda and water.

6. HEAT, generated in leads and clips, which becomes more than warm to the touch is a result of a poor connection and will result in an extra load being placed on the unit.

7. LARGE ranges have been placed on meters for heavy loads, SMALL ranges for finer reading. Always select the range large enough for the job, or damage will result.

8. IN MAKING ELECTRICAL CONNECTIONS, always watch the meter when you cause the current to flow; don't overload the meter. Use the proper shunt.

9. MOISTURE is second only to grease-and-dirt in shortening the life of electrical equipment. One of the less obvious ways in which moisture can damage equipment is to store in a non-heated area. Moisture can cause meters to stick, transformers to short, insulation and condensers to deteriorate.

10. METERS REQUIRING A POWER SUPPLY. A.C. or D.C. current may be required. It may be of a high or low voltage. Exercise caution in connection units to proper voltage source.

11. POWER TIMING LAMP. Its life will be greatly lengthened if disconnected when not in use.

12. POLARITY. Care should be exercised to see that units are not connected in reverse polarity.

13. In most cases, when units have been subjected to materials used in fire extinguishers, they may be considered beyond repair in making insurance adjustment.

14. SIX VOLT PLUG-IN RECEPTACLE UNITS will work better after a small amount of powdered graphite has been applied.

15. FANS. Units having a fan for cooling purposes cannot function well if covered, as air flow is restricted.

16. METERS exposed to the sun's rays for long periods of time will fade.

17. GROWLERS should not be turned "ON" unless first an armature has been placed into position to test.

18. UNITS USING FLASHLIGHT BATTERIES should be turned to the "OFF" position when not in use. When the batteries become discharged they should be removed at once, or damage will result.

19. IN EACH INSTANCE, REFER TO THE INSTRUCTION MANUAL BEFORE ATTEMPTING TO OPERATE. MINOR CHANGES HAVE SOMETIMES BEEN MADE, AND NEW MODELS MAY OPERATE DIFFERENTLY THAN PREVIOUS ONES.

ALLEN ELECTRIC AND EQUIPMENT COMPANY
2101 N. PITCHER STREET KALAMAZOO, MICHIGAN, U. S. A.
FORM NO. 503 PRINTED IN U.S.A.

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8. IN MAKING ELECTRICAL CONNECTIONS, always watch the meter when you cause the current to flow; don't overload the meter. Use the proper amount.

9. MOISTURE is second only to grease-and-dirt in shortening the life of electrical equipment. One of the less obvious ways in which moisture can damage equipment is to store it in a non-heated area. Moisture can cause meters to stick, transformers to short, insulation and condensers to deteriorate.

10. METERS REQUIRING A POWER SUPPLY. A.C. or D.C. current may be required. It may be of a high or low voltage. Exercise caution in connection units to proper voltage source.

11. POWER TIMING LAMP. Its life will be greatly lengthened if disconnected when not in use.

12. POLARITY. Care should be exercised to see that units are not connected in reverse polarity.

13. In most cases, when units have been subjected to materials used in fire extinguishers, they may be considered beyond repair in making insurance adjustment.

14. SIX VOLT PLUG-IN RECTIFIER UNITS will work better after a small amount of powdered graphite has been applied.

15. FANS. Units having a fan for cooling purposes cannot function well if covered, as air flow is restricted.

16. METERS exposed to the sun's rays for long periods of time will fade.

17. CONTACTORS should not be turned "ON" unless first an armature has been placed into position to seat.

18. UNITS USING FLASHLIGHT BATTERIES should be turned to the "OFF" position when not in use. When the batteries become discharged they should be removed at once, or damage will result.

19. IN CASE INSTANCE, REFER TO THE INSTRUCTION MANUAL BEFORE ATTEMPTING TO OPERATE. MINOR CHANGES HAVE SOMETIMES BEEN MADE, AND NEW MODELS MAY OPERATE DIFFERENTLY THAN PREVIOUS ONES.

ALLEN ELECTRIC AND EQUIPMENT COMPANY
2101 N. PITCHER STREET KALAMAZOO, MICHIGAN, U.S.A.

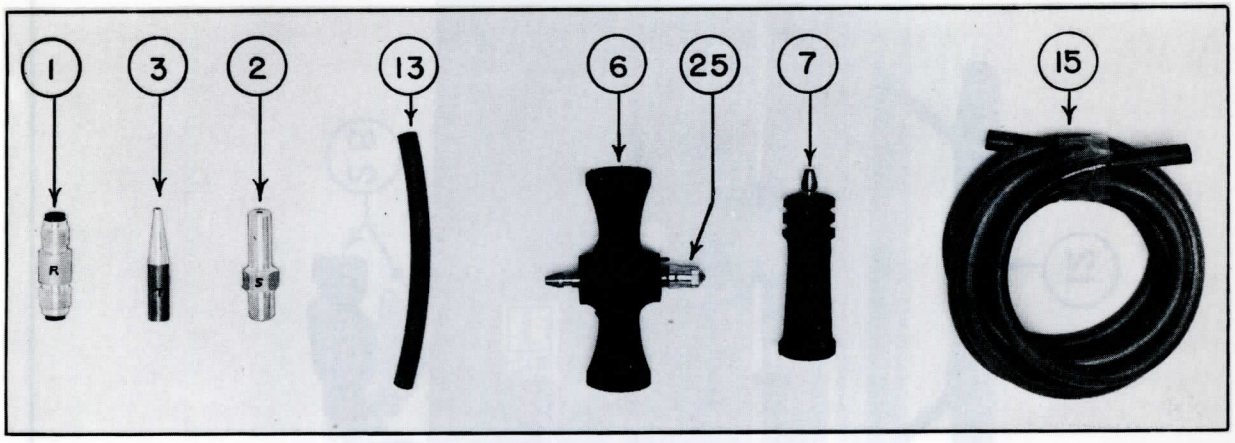
FORM NO. 606 PRINTED IN U.S.A.

ALLEN ELECTRIC AND EQUIPMENT CO.

E-305 REPLACEMENT PARTS LIST

FOR TESTERS MARKED TYPE "A", "B", "C", AND "D".

NOTE: SPECIFY MODEL AND SERIAL NUMBER OF EQUIPMENT FOR WHICH PARTS ARE DESIRED. THIS IS ESSENTIAL FOR PROMPT HANDLING OF YOUR ORDER.



KEY	PART	DESCRIPTION	PART NO.
1	Adapter	Marked "R" with rubber inserts	A-7720
2	Adapter	Marked "S"	7721
3	Adapter	Marked "T" tapered end	7722
4	Bumper	Rubber feet for case (4 Required)	6847
5	Case	Complete with pop-up handle and bumpers	A-8414
6	Connector	Molded rubber, less valve cap	7704
7	Connector	Molded rubber	7716
8	Connector	Vacuum and pressure outlet from panel (2 Required)	7146
9	Connector	Two Prong panel lights connector	A-6794
10	Gauge	Pressure Gauge	7706
11	Gauge	Vacuum Gauge	7723
12	Handle	Bakelite handle complete with supports	A-6824
13	Hose	Rubber tubing 4" long for adapter	7660
14	Hose	Rubber tubing 6" long inside case (2 Required)	7708
15	Hose	Rubber tubing 6 feet long extension	7710
16	Insulator	For panel lights connector	6879
17	Lamp Housing	Lamp housing for gauges (2 Required)	A-6485
18	Lamp	Min. bayonet type 6-8 volts	6377
19	Panel & Decal	Panel complete with Decal and window	A-6821-9
20	Panel Decal	Decal only	6817-9
21	Plug Button	"Zero Adjust" hole plug	6389-1
22	Replacement Kit	Includes the following: 1,2,3,6,7,13,15 and 25	A-7664
23	Retainer Ring	"Round" for securing connector outlets	7018-2
24	Retainer Ring	"Square" for securing connector outlets	6626-139
25	Valve Cap	Common Valve Cap Only	1535
26	Window Cover	Clear Plastic window for panel	6270
	Sub-Panel	Sheet Metal Sub-Panel	A-6490-6
		E-305 LEADS AND LEAD PARTS	
27	Battery Lead	Complete with Clips	A-6810
28	Clip	Battery Clip	1220

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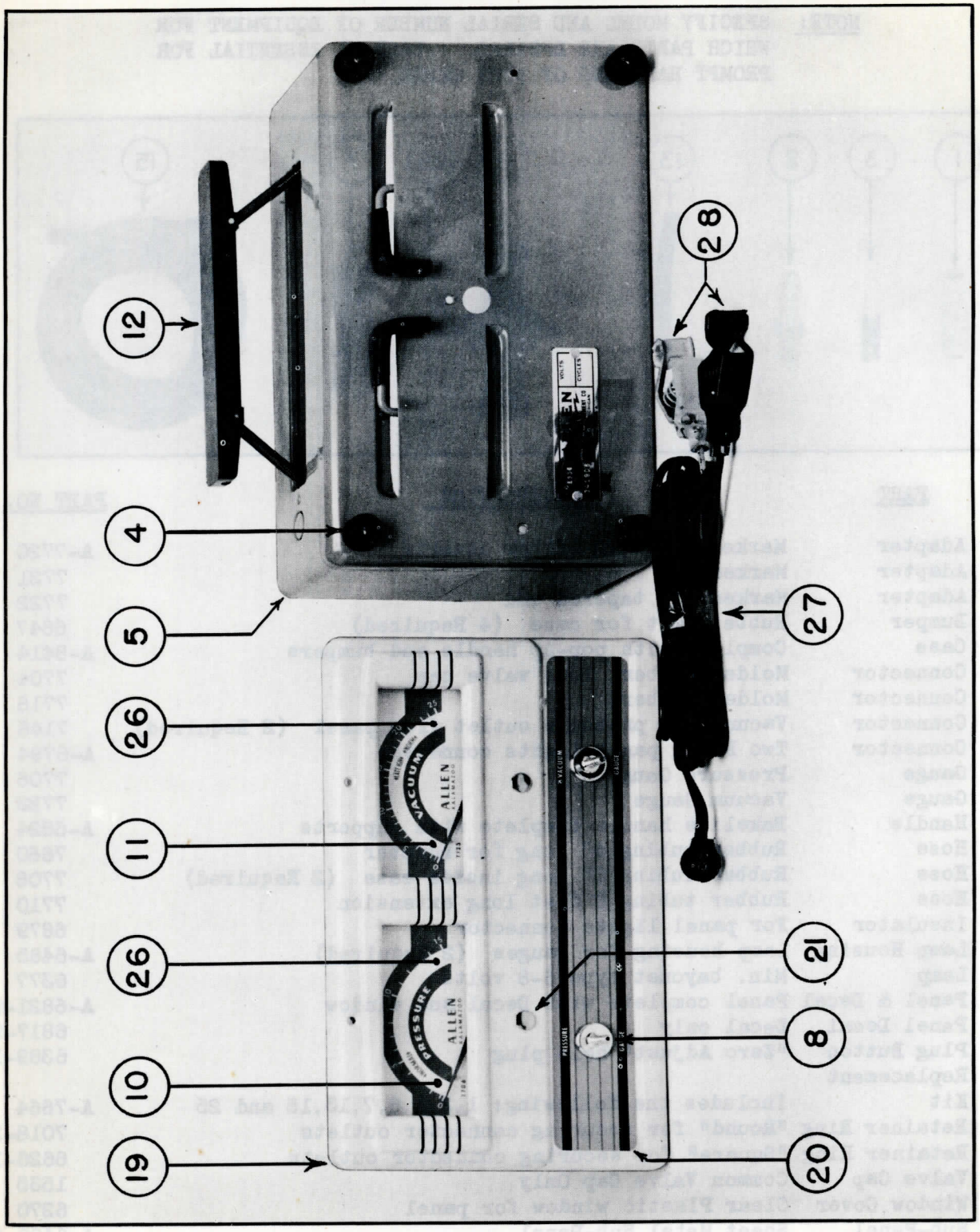

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